

We claim:

1. An adaptive equalizer for generating an error signal, the adaptive equalizer comprising:
 - a trellis decoder having an input port for accepting an input signal and an output port for providing an output signal;
 - wherein the error signal is generated by subtracting the input signal from the output signal.
2. The adaptive equalizer of claim 1, further comprising a decision feedback equalizer, and wherein the signal passes through the decision feedback equalizer before it is subtracted from the output signal.
3. The adaptive equalizer of claim 1, further comprising a mapper, and wherein the output signal is mapped and scaled by the mapper before it is provided to the decision feedback equalizer.
4. The adaptive equalizer of claim 1, further comprising an FIR filter, and wherein the input signal passes through the FIR filter before it is input to the trellis decoder.
5. An adaptive equalizer comprising:
 - an FIR filter having an FIR filter output;
 - a trellis decoder having a trellis decoder input coupled to the FIR filter output;

a mapper coupled to the trellis decoder, having a mapper input, a first mapped and scaled output and a second mapped and scaled output, the mapper being coupled to the trellis decoder output; and

a decision feedback equalizer having a DFE input and a DFE output, wherein the DFE input is coupled to the first mapped and scaled output;

wherein an error signal is generated by subtracting the trellis decoder input from the second mapped and scaled output.

6. An adaptive equalizer comprising:

an FIR filter having an FIR filter output;

a trellis decoder having a trellis decoder input coupled to the FIR filter output;

a mapper coupled to the trellis decoder, having a mapper input, a first mapped and scaled output and a second mapped and scaled output, the mapper being coupled to the trellis decoder output; and

a decision feedback equalizer having a DFE input and a DFE output, wherein the DFE input is coupled to the first mapped and scaled output;

wherein an error signal is generated by subtracting the trellis decoder input from the second mapped and scaled output.

7. An adaptive equalizer wherein an error signal is generated using only an FIR filter, a trellis decoder, a mapper, and a decision feedback equalizer.

8. The adaptive equalizer of claim 7, wherein the error signal is generated by adding the output of the FIR to an output of the trellis decoder, mapper, and decision feedback equalizer.

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